Mathematica 11.3 Integration Test Results

Test results for the 16 problems in "4.6.1.3 (d cos)^n (a+b csc)^m.m"

Problem 6: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[x]^2}{a + a\,\text{Csc}[x]}\,dx$$

Optimal (type 3, 23 leaves, 6 steps):

$$\frac{\text{Sec}[x]^3}{3\,a} - \frac{\text{Tan}[x]^3}{3\,a}$$

Result (type 3, 56 leaves):

$$-\frac{-3 + \text{Cos}[2x] - 2\,\text{Sin}[x] + \text{Cos}[x]\,\left(1 + \text{Sin}[x]\right)}{6\,a\left(\text{Cos}\left[\frac{x}{2}\right] - \text{Sin}\left[\frac{x}{2}\right]\right)\left(\text{Cos}\left[\frac{x}{2}\right] + \text{Sin}\left[\frac{x}{2}\right]\right)^3}$$

Problem 8: Result more than twice size of optimal antiderivative.

$$\int \frac{\text{Sec}[x]^4}{a + a\,\text{Csc}[x]}\,dx$$

Optimal (type 3, 34 leaves, 7 steps):

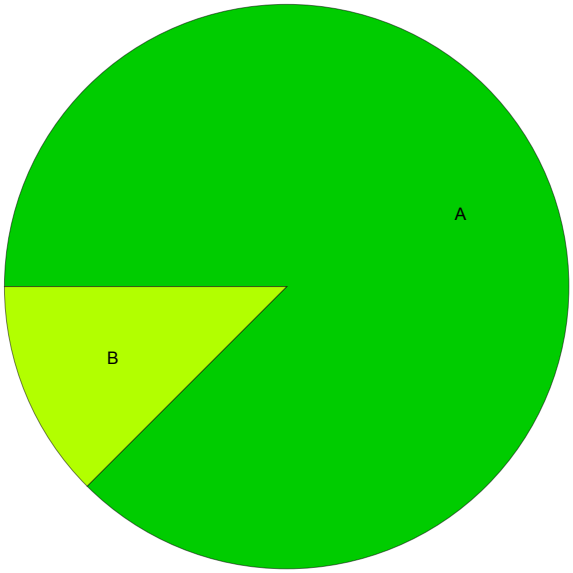
$$\frac{\text{Sec}[x]^5}{5\,a} - \frac{\text{Tan}[x]^3}{3\,a} - \frac{\text{Tan}[x]^5}{5\,a}$$

Result (type 3, 85 leaves):

$$-\left(\left(-240 + 54\,\text{Cos}[x] + 32\,\text{Cos}[2x] + 18\,\text{Cos}[3x] + 16\,\text{Cos}[4x] - 96\,\text{Sin}[x] + 18\,\text{Sin}[2x] - 32\,\text{Sin}[3x] + 9\,\text{Sin}[4x]\right) \Big/ \left(960\,a\left(\text{Cos}\left[\frac{x}{2}\right] - \text{Sin}\left[\frac{x}{2}\right]\right)^3\left(\text{Cos}\left[\frac{x}{2}\right] + \text{Sin}\left[\frac{x}{2}\right]\right)^5\right)\right)$$

Summary of Integration Test Results

16 integration problems



A - 14 optimal antiderivatives

B - 2 more than twice size of optimal antiderivatives

C - 0 unnecessarily complex antiderivatives

D - 0 unable to integrate problems

E - 0 integration timeouts